USDA-FOREST SERVICE FS-2500-8 (6/06)

Date of Report: **July 7, 2011**
Interim #1

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[x] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[x] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[x] 2. Interim Report # 1 Items are Bolded & Blue Font
[**x**] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Murphy Complex

B. Fire Number: AZ-CNF-011057

C. State: Arizona

D. County: Santa Cruz

E. Region: 3

F. Forest: Coronado

G. District: Nogales

H. Fire Incident Job Code: P3F4EJ

I. Date Fire Started: 5/30/11

J. Date Fire Contained: 6/14/11

K. Suppression Cost: $5,692,555

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 0
2. Fireline seeded (miles): 0
3. Other (identify): 0

M. Watershed Number: 1508020001, 150503005, 1505030104

N. Total Acres Burned: 68,079
NFS Acres(66,465) Other Federal ( ) State (852) Private (762)

O. Vegetation Types: Desert and semi-desert grassland, Grass mix, Oak-juniper-pinyon mix

P. Dominant Soils: Lithic Ustochrepts, Aridic Ustochrepts, Fluventic Ustochrepts

Q. Geologic Types: Rhyolite, Alluvium

R. Miles of Stream Channels by Order or Class: first order 389 miles, second order 27 miles

S. Transportation System

Trails: 6 miles Roads: 90.2 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 51,107 (low) 15,284 (moderate) 1688 (high)

B. Water-Repellent Soil (acres): 1688

C. Soil Erosion Hazard Rating (acres):
51107 (low) 15284 (moderate) 1688 (high)

D. Erosion Potential: 3.76 tons/acre

E. Sediment Potential: 1605 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3-5

B. Design Chance of Success, (percent): 80

C. Equivalent Design Recurrence Interval, (years): 25

D. Design Storm Duration, (hours): 1

E. Design Storm Magnitude, (inches):

F. Design Flow, (cubic feet / second/ square mile): 180 (Sycamore Canyon WS)

G. Estimated Reduction in Infiltration, (percent): 27%

H. Adjusted Design Flow, (cfs per square mile): 229 (Sycamore Canyon WS)

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

1. Human Life and Safety – John Hayes of Santa Cruz County Flood Control District and Floodplain Administration has been contacted by the team. He is aware of the potential for flash floods, sediment delivery and debris in channels on the east side of the district. Mr. Hayes work with private landowners, the sand and gravel operation, and the Calabasas School to let them know of the flooding conditions expected following the first few rain fall events. At risk are the Lowell Ranch, Commings Ranch, and Kane Ranch and all buildings at these locations are on terraces approximately 4 feet or higher above the active channel. The Rock Corral Ranch lower and closer to the channel, however, it is along a small tributary that was predominantly unburned, or had low severity. The team did not evaluate the Aliso Ranch, Mr. Hayes will contact them. Mr. Hayes will work with the school to develop an evacuation plan as the school has flooded in the past. The property in the Walker Canyon area may be at risk and Mr. Hayes has been asked to contact property owners in this area.

Bridges –
Agua Fria Bridge is well outside of the fire area on private land. The bridge appears to have ample clearance for large flow events. The channel is relatively free from woody debris.

Sycamore Bridge is on FS. The riparian area in the vicinity of the bridge did not burn. Much of the channel and tributaries were unburned or low severity. It appears the bridge can withstand relatively large flood events. There was no accumulative of woody debris in the channels.

Peck Canyon Bridges are well outside the fire on private land. These bridges have endured several large flow events.

Rock Corral Culverts are well outside the fire on private land. These culverts have endured several large flow events.

El Paso Natural Gas Pipeline –
The pipeline crosses several canyon bottoms and there is the potential for the pipeline to wash out and interrupt service. The EPNG should be notified of the potential for flooding and scouring so they can conduct an assessment of pipeline safety.

2. Recreation Resources
Pena Blanca Lake**.** The lake is a popular recreation area. The lake is threatened by sedimentation from the burned area, hazard trees in the vicinity of visitor facilities.

Atascosa Lookout and Trail. Although not included in the National Register listing for Atascosa Lookout, the trail to the lookout was evidently built by the CCC and is considered to be a related historic feature.

3. Natural Resources
Soils. Most of the area burned with low to moderate severity. Approximately 1600 acres burned with high serverity around the Atascosa Lookout. These polygons are interspersed with moderate severity areas and in two different watersheds. Accelerated soil erosion is expected after the first few rainfall events. The low and moderate burn severity areas are expected to have some soil movement during the first few events, and vegetation on these sites is expected to begin recovery immediately, and fully recover within approximately 3 years.

Invasive Plants. The burned areas and travel corridors are at an elevated risk for invasion by invasive plant species. Species of particular concern are: buffelgrass, Lehmann's lovegrass, and tamarisk.

TES Species.
Frogs. Loss of Chiricahua leopard frog (threatened) and lowland leopard frog (FS sensitive) habitat in various tanks, ponds and springs. Loss of Sonora chub (threatened) designated critical habitat in Sycamore Canyon and in Penasco Canyon. This is the only US population of this species. Several tanks serve as habitat for Chiricahua and lowland leopard frogs: Summit, Thumb Butte, Ronquillo Pond (Pena Blanca Spring) and Pena Blanca Lake are proposed critical habitat for the Chiricahua leopard frog. Yank, Summit, Lookout, Bear Valley Ranch, Tinker, Bellota, and Mesa Tanks; as well as Waterfall Spring, Ronquillo Pond and Pena Blanca Lake are occupied by Chiricahua and/or lowland leopard frogs and warrant protection.

MSO. There are designated Mexican Spotted Owl habitat in the burned area.

Jaguar. There is potential jaguar habitat in the area. There have been several observations of jaguars in the area.
Alamo Canyon Sediment Trap. This sediment trap is upstream from occupied leopard frog habitats at Pena Blanca Lake and Pena Blanca Spring. The sediment trap was installed to reduce sediment going into the lake as part of a CERCLA project to reduce mercury from entering the Lake. It also services to protect recreation resouces and wildlife habitat.

4. Cultural Resources

The Atascosa Lookout house (AR03-05-02-126), the primary feature at a site that is listed on the National Register of Historic Places, was destroyed during the Murphy Complex wildfire. Several other historical features comprise the lookout complex, and a few of these were damaged as well, although far less severely than the cabin. The lookout house was built by the Forest Service in 1930 based on the standard L-4 lookout house plans. The majority of the ancillary features, mainly of rock and concrete masonry, and the trail were evidently installed by the CCC a few years later.

Lookout House. The lookout house, or cabin, was nearly completely consumed by fire. It appears that the structure collapsed in on itself and burned at a high intensity. Melted glass was observed. The cabin sat upon a stone masonry foundation, and several of the stones exhibit spalling on their interior sides. The tree stump within the foundation's west wall that supported the cistern's retaining wall was consumed by fire, creating a void in the foundation. The wood-burning stove that was in the structure's northwest corner now lies below the level where the wood floor existed. The foundation is now filled with debris from the recently reconstructed roof, charcoal, two bed frames, melted remnants of the windows, and many nails and other fasteners.

Upper Cistern. The upper cistern was largely unaffected by the fire, but its structural integrity has been compromised. A retaining wall of dry-laid stone at the base of the feature was tied into the lookout cabin's foundation by a length of thick wire attached to an old stump incorporated in the foundation. The stump was consumed by fire, and the wire is now loose and provides no support to the retaining wall. The masonry façade of the cistern has a previously existing crack, but further damage to the retaining wall could exacerbate the damage.

Lower Cistern. The cement cap on the lower cistern appears to have been damaged during the fire. Previous examinations of the cistern found it to be intact, but about one-third of the cement cover is badly damaged. This could pose a hazard to the public and/or wildlife, as well as hasten damage of the feature.

Outhouse. The outhouse has been in the process of reconstruction. The wooden structure that had fallen into disrepair was re-built in the 1970s or 1980s. The stone masonry foundation was partially reconstructed and was not damaged by the fire.

Incinerator. This feature primarily consists of a stone masonry structure with a concrete cover and a metal hatch. The feature was not damaged by fire.

Underground Storage. This feature consists of dry stacked masonry walls built into the hillside. The feature has been devoid of any roof or wooden elements for many years. It was not affected by the fire.

Risks:

Using the BAER Risk Assessment Table in exhibit 02, FSM Interim directive 2520-2010-1, the following assessment is made.

	Probability	Magnitude	Risk	BAER EMERGENCY?
Human Life and Safety				
Forest Trails	Very Likely	Major	Very High	Yes. Hazard trees (burned snags) and the risk of falling rocks present a significant risk to human life and safety along many trail segments.
Private Homes	Likely	Moderate	High	Yes. Three private landowners have homes constructed in close proximity to drainages where bank erosion may cause the channel to encroach on structures.

	Probability	Magnitude	Risk	BAER EMERGENCY?
Campgrounds	Possible	Major	High	Yes. White Rock CG is located in a potential flood zone below the confluence of Alamo and Pena Blanca Creeks. These are major drainages of the Murphy, Bull and Pena fires.
Property				
Agua Fria, Peck Canyon Bridges; Rock Corral culverts	Unlikely	Major	Intermediate	Yes. These bridges and culverts are the access between Nogales, Rio Rico, Tumacacori, Tubac, and Tucson. They have endured many flood events.
Sycamore Bridge	Unlikely	Moderate	Low	No. This bridge is the access to Ruby and Arivaca. There are other routes. This location was a low water ford for many years.
El Paso Natural Gas line	Unlikely	Major	Intermediate	No. This pipeline is an important part of the infrastructure for the area. The El Paso Natural Gas Co. should be notified of the potential for flooding and scouring so they can conduct an assessment of pipeline safety
Recreation				
Pena Blanca Lake**.**	Possible	Major	Intermediate	Yes. The lake is a popular recreation area. The lake is threatened by sedimentation from the burned area, hazard trees in the vicinity of visitor facilities
Atascosa Lookout and Trail.	Possible	Major	High	Yes. A popular recreation hike destination. Damage to the lookout complex and trees along the trail make this an unsafe situation for the public.
Natural Resources				
Soils.	Possible	Major	High	Most of the area burned with low to moderate severity. Approx 1600 acres burned with high severity around Atascosa Lookout. These polygons are interspersed with moderate severity areas and in two different watersheds. Accelerated soil erosion is expected after the first few rainfall events. The low and moderate burn severity areas are expected to have some soil movement during the first few events, and vegetation on these sites is expected to begin recovery immediately, and fully recover within approximately 3 years.

	Probability	Magnitude	Risk	BAER EMERGENCY?
Invasive Plants.	Unlikely	Major	Intermediate	Yes. The burned areas and travel corridors are at an elevated risk for invasion by invasive plant species. Species of particular concern are: buffelgrass and tamarisk
TES Species. *Frogs and fish*.	Possible	Major	High	Yes. Loss of Chiricahua leopard frog (threatened) habitat in various tanks, ponds and springs. Loss of Sonora chub (threatened) designated critical habitat in Sycamore Canyon and in Penasco Canyon.

B. Emergency Treatment Objectives:

Mitigate effects of changed post-fire watershed response on forest roads and drainages.
Mitigate effects of changed post-fire watershed response on long-term soil productivity and hydrologic function.
Mitigate effects of changed post-fire watershed response on recreation facilities and infrastructure.
Mitigate effects of changed post-fire watershed response on historic properties and cultural resources.
Mitigate effects of changed post-fire watershed response on adjacent property owners.
Mitigate effects of changed post-fire watershed response on the spread of invasive plant species.
Mitigate effects of wildfire on visitor safety.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land __ % Channel __ % Roads/Trails **70** % Protection/Safety **90** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
Channel			
Roads/Trails	70	90	90
Protection/Safety	90	90	90

E. Cost of No-Action (Including Loss): **$1,038,600**

F. Cost of Selected Alternative (Including Loss): **$276,590**

G. Skills Represented on Burned-Area Survey Team:

[x] Hydrology [x] Soils [ ] Geology [x] Range
[ ] Forestry [x] Wildlife [ ] Fire Mgmt. [ ] Engineering
[ ] Contracting [x] Ecology [x] Botany [x] Archaeology
[ ] Fisheries [ ] Research [ ] Landscape Arch [x] GIS

Team Leader: Robert Lefevre
Email: rlefevre@fs.fed.us Phone: 520.388.8373

H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

Noxious Weed Detection Surveys:

Surveys will begin in 2011 after the monsoon season, during the resprouting and flowering periods of weed species. Because of differences in flowering times for all potential species, two visits may be required during the growing season. Completion of surveys in riparian areas, dozerlines, and known pre-existing invasive and sensitive plant populations would be the first priority. The fire area is in close proximity to the Pajarita Wilderness and it is essential to target the known invasive species populations that are along Interstate 19 that is used to access the wilderness area and was a main access to the fire area during suppression.

Noxious Weed Detection Survey Costs:

Item	Unit	Unit Cost	# of Units	Cost
GS-11 Botanist	Days			
2 GS-09 Botanists	Days			
Gloves, Lopers, Hand Saws, and Bag	Each			
Vehicle	Miles			

Pena Blanca Lake. Close the area until it is determined to be safe. This area needs additional assessment of facilities and trails. The dock burned and sank. It has been retrieved and portions may be able to be salvaged. District staff are planning to conduct additional surveys.

Place wattles along the bank above the sidewalk between the road and in the Lower Thumb Rock area. Wattles may also be needed along the bank on the east side of Lower Thumb Rock.

Remove hazard trees from riparian area at Lower Thumb Rock that could potentially fall into the sidwalk or picnic area. Leave large, non-hazardous trees for cavity nesting birds.

Remove small dead trees, downed trees, and dead brush and limb up surviving trees around the lake and in the picnic and camping areas to make the recreation area safer for the public when the closure is lifted. If in doubt as to whether a tree will recover it can be left standing and removed later if needed as long as it is not a hazard. Some dead large trees should be left for wildlife habitat.
***See "Human Life and Resource Protection" under "Protection/Safety Treatments" section for treatments regarding Pena Blanca Lake.**

Chiricahua leopard frog:

Two small inlets at Pena Blanca Lake were identified as critical habitat for the Chiricahua leopard frog, which is a Threatened and Endangered Species. The hill slopes above these two critical habitats are denude of vegetation. These hill slopes have a high erosion rating and have the potential to be a direct source of sediment into the critical habitat.

The BAER team recommends seeding and mulching with agricultural straw to stabilize the hill slope directly above the inlet. Also, place a compost filter sock below each site to catch additional sediment that might directly enter the inlet.

Hill slope Stabilization at Pena Blanca Lake Costs:

Item	Unit	Unit Cost	# of Units	Cost
Engine Crew	Day			
Mileage	Mile			
Biologist GS-11	Day			
Mileage	Mile			
Ag Straw	Bale			
Seed	Acre			
Miscellaneous Materials – filter sock, stakes, etc.	Linear Foot			
Total Cost				

Ramanote Canyon. District staff observed that Ramanote Canyon burned with higher severity than other areas. Additional work is needed to determine if action must be taken.

Penasco Canyon/Summit Motorway Areas. Some of these areas have loamy soils and were completely burned. Additional work is needed to determine if action must be taken.

Water Sources –
Several stock tanks may need sediment traps in order to maintain water for livestock and wildlife. Tanks for treatment include: Split, H6, Summit, coyote, Negro and Rock Dam. District personnel are continuing to evaluate priority tanks and would like to treat a total of 15-20 in order to maintain sufficient water.

Tanks that provide habitat and proposed critical habitat for the Chircahua leopard frog and the lowland leopard frog should be treated to reduce sediment. Sediment traps above the following tanks/ponds are recommended: Thumb Butte, Ronquillo Pond, Yank, Lookout, Bear Valley Ranch, Tinker, Bellota, and Mesa Tanks.

Alamo Canyon Sediment Trap. Remove as much sediment as possible from the gabion pre-monsoon. Remove new accumulated sediment after each substantial rainfall event. If there are structures that can be placed between the sediment trap and Ronquillo Pond to keep the water from going around the gabion and washing through the pond these should be constructed. Possibly a filter sock (See this website for info: http://www.files.georgia.gov/SWCC/Files/GSWCC_Compost_Filter_Sock_Specs.pdf) or concrete barriers could be used.

The treatment recommendation for the Alamo Canyon sediment traps associated with Ronquillo pond and Pena Blanca Lake is to clean them prior to the monsoon season. The objective is to remove pre-loaded material from the sediment traps so they are functioning at maximum capacity when the monsoon season hits.

Cleaning Ronquillo Pond Sediment Traps Costs:

Item	Unit	Unit Cost	# of Units	Cost
Front End Loader	Day			
GS-11 Biologist	Day			
Installation of Filter Sock – crew and supplies	Each			
Total				

Wells –
Peck Canyon and Ramanote wells are located in the channels. These belong to the United States. Structures such as jersey barriers fortified with rammed earth are recommended.

Seeding – Additional assessment is being conducted to determine is seeding is appropriate.

Channel Treatments:

No channel treatments are planned at this time.

Roads and Trail Treatments:

Atascosa Trail. If work is planned for the lookout area, remove hazard trees and trees blocking the trail. Monitor the trail for damage from erosion following the summer rains and repair the trail as necessary. Replace mileage marker signs along the trail.*
***See "Atascosa Lookout" under "Protection/Safety Treatment" section.**

Forest Roads. Install warning signs to alert forest users of hazards such as flash floods. Assessment of culverts is continuing.

Forest Trails. Install warning signs to alert forest users of hazards such as flash floods and falling debris.

Trail Treatments:
There are approximately 2 miles of trail in moderate and high burn severity in need of tread stabilization followed by administrative closure. Treatment consists of installing or improving water control features (dips, low water crossings etc) in the trail where needed to protect the tread and reduce stream capture potential; minor amounts of hazard tree removal exist for safety of crews performing the work. Despite recommendation for administrative closure to alleviate life and safety hazards to the public, trail stabilization is recommended to prevent loss of significant portions of the trail as infrastructure.

Trail Treatment Cost:

Item	Unit	Unit Cost	# of Units	Cost
1 WG-7 Rec. Tech for 2 days to lead Type II Crew	Days			
1 – Type II Crew	Days			
Vehicle – /Implementation	Miles			
Hazard Tree Removal – 1 Engine Crew	Day			

Protection/Safety Treatments:

Atascosa Lookout. Despite the extensive damage to the lookout cabin, the location is expected to continue to attract future visits from the public. Furthermore, several other features associated with the lookout sustained only minor damage and maintain sufficient integrity to convey the historical significance of the lookout. The following recommendations are intended to insure public safety and preserve the remaining components of the site:

- Remove the burned debris from within the cabin's foundation (collect the wood stove).
- Cover the voids in the lookout house's foundation.
- Provide new anchoring for the retaining wall below the upper cistern and monitor the existing crack on the concrete façade.
- Cover the lower cistern.

Because of the damage to the Atascosa Lookout, a site on the National Register of Historic Places, as well as a popular NFS trail used by the public to access the lookout, the BAER team recommends treatment. The Atascosa Lookout area needs stabilizing to prevent hazardous material from entering and degrading the watershed. The BAER team recommends using Compost filter socks, a three-dimensional tubular sediment control and storm water filtration device, to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff for the Atascosa Lookout area, or straw wattles. The WG-7 should prepare any trails work with the Archeologist and line out the crew for trails work for the historical trail leading to the Atascosa Lookout.

Atascosa Lookout:

Item	Unit	Unit Cost	# of Units	Cost
1 – Engine Crew for implementation for Atascosa Lookout	Days			
Vehicle – Implementation	Miles			
Materials – filter sock, stakes, tools, etc.	Each			
GS-11 Archeologist	Days			

Interagency Coordinator:

Throughout the monsoon season and the following winter, the Forest should continue coordinating with cooperating agencies, relaying the BAER Assessment findings, and providing input as rain events are predicted.

Line Item	UNIT	UNIT COST	# OF UNITS	COST
Personnel Cost	Days			
Travel Per diem	Days			
Total Cost				

I. **Monitoring Narrative:**

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

The monitoring plan is being developed.

Treatment Effectiveness Monitoring: Utilizing the two GS- 7 FPO's who will be patrolling the areas to enforce the Forest Closure, they will also be conducting treatment effectiveness monitoring for BAER treatments to see what may need corrective action after any damaging storms during monsoon season. The patrols will check signs, information boards, temporary fencing, gate closures. Monitor conditions and initiate corrective action, when safe to do so, after storm events, including BAER trail treatments. The # of Units, 10, indicate the average number of storms throughout the monsoon season. An interim funding request would be submitted if additional treatments are needed.

Treatment Effectiveness Monitoring Costs:

Item	Unit	Unit Cost	# of Units	Cost
Post-storm event Monitoring	Days			

Part VI – Emergency Stabilization Treatments and Source of Funds Interim # 1

			NFS Lands				Other Lands			
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
Noxious Weed Detection Surveys										
Install sediment traps at tanks										
Clean Alamo Canyon Sediment Trap										
Well Protection										
straw wattles										
Hill Slope Stabilization										
Cleaning Ronquillo Pond Sediment Traps										
Subtotal Land Treatments										
B. Channel Treatments										
C. Road and Trails										
Trail Treatment (stabilization)										
Subtotal Road & Trails										
D. Protection/Safety										
Install hazard signs for roads										
Install hazard signs for trails										
Install 'area closed' signs										
Atascosa Lookout Treatment										
Interagency Coordinator										
Subtotal Structures										
E. BAER Evaluation										
Assessment										
Subtotal Evaluation										
F. Monitoring										
Invasive species										
Treatment Effectivness Monitoring										
Subtotal Monitoring										
G. Totals										
Previously approved										
Total for this request										

PART VII - APPROVALS

1. /s/ Reta Laford — 7/7/11
   For Forest Supervisor (signature) — Date

2. /s/ C.L. Newman Jr. — 7/8/11
   Regional Forester (signature) — Date